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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/558,542	11/29/2005	Akira Usui	YAMA:109	6411

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EXAMINER	
PAUL, DISLER	
ART UNIT	PAPER NUMBER
2615	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/558,542	USUI, AKIRA	
	Examiner	Art Unit	
	DISLER PAUL	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-8* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

In response to the applicant's amended claim wherein the concept of "driving the front speaker only in regard to Bessel function and similarly driving the rear-side speaker channel according to another processing function". such, claim has been considered and thus is rejected in view of new prior art.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jaffe (US 4,061,876) and Yanagawa et al. (US 5,233,664) and Prinssen (US 5,119,428).

Re claim 1, Jaffe disclosed of the array speaker system comprising: a plurality of speaker unit in arranged in array (fig.3 wt (20a-b); (22a-b)) a means for inputting front-side channel signals for instructing reproduction of sound at a front side of a listening position and rear-side channel signals for instructing reproduction of sound at a rear side of the listening position (fig.1 wt (20a-b); (22a-b); col.1 line 50-57; col.2 line 33-47).

Jaffe further disclosed of the means for driving the speaker unit for only the front side channel signals to generate sound signal at the front side of the listening position and means for driving the speaker unit with the rear side channel signals with a prescribed delay processing to produce a sound to the rear side of the listening position (fig.1, 3 (30,32,34); col.3 line 30-55).

While, Jaffe disclose of the above with processing of sound (front and rear) with different means. But, Jaffe fail to disclose of the specific wherein the means for driving the front-side channel signal being the specifically based according to weight coefficient provided by Bessel function to generate a substantially spherical sound emission pattern at the front side of the listening position. However, Yanagawa et al. disclose of system with similar concept wherein the means for driving the plurality of speaker units including front speakers with weights using weight coefficients based on a Bessel function with respect to the front-side channel signals (fig.1-3, col.1 line 55-65, col.2 line 5-12, col.7 line 30-65/with Bessel function) for the purpose of controlling the speaker directivity with wide range of frequencies. Thus, taking the combined teaching of Jaffe and Yanagawa et al. as a whole, it would have been obvious for one of the ordinary skill in the art to have modify Jaffe with the similar concept wherein the means for driving the plurality of speaker units including front speakers with weights using weight coefficients based on a Bessel function with respect to the front-side channel signals for the purpose of controlling the speaker directivity with wide range of frequencies.

The combined teaching of Jaffe and Yanagawa et al. as a whole, disclose of such generating a substantially spherical sound emission pattern at the front side of the listening position (fig.19-24; col.8 line 30-40).

While, the combined teaching of Jaffe and Yanaga et al. as a whole, disclose of the sound processing signals of front and rear channels with Bessel function. But, they fail to disclose of the specific wherein such rear-side channel signals with prescribed delay processing to produce a sound beam that is directed to a reflecting surface that reflects the sound beam to the rear side of the listening position. But, Prinssen et al. disclose of an electro-acoustic system wherein such channel signals with prescribed delay processing to produce a sound beam that is directed to a reflecting surface that reflects the sound beam to the rear side of the listening position (col.7 line 43-53; col.8 line 20-35; col.12 line 10-25) for purpose of improving the acoustic or a room in which music to be performed and enhancing the spaciousness of the sound. Thus, taking the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of Jaffe and Yanaga et al. as a whole, with the channel signals with prescribed delay processing to produce a sound beam that is directed to a reflecting surface that reflects the sound beam to the rear side of the listening position for purpose of improving the acoustic or a room in which music to be performed and enhancing the spaciousness of the sound.

2. An array speaker system according to claim 1, wherein the plurality of speaker units form a left array speaker arranged at a left side and a second array speaker arranged at a right side (Jaffe, fig.1,3; wt (array at each side)).

3. An array speaker system according to claim 2, But, the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, fail to disclose of wherein the front-side channel signals are formed using a left channel signal, a right channel signal, and a center channel signal, and the rear-side channel signals include a surround left channel signal and a surround right channel signal. But, official notice is taken such concept of having a front-side channel signals are formed using a left channel signal, a right channel signal, and a center channel signal, and the rear-side channel signals include a surround left channel signal and a surround right channel signal is well known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, with the front-side channel signals are formed using a left channel signal, a right channel signal, and a center channel signal, and the rear-side channel signals include a surround left channel signal and a surround right channel signal for creating optimum surround effect.

The combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, teach of the above with sound means processing as for each

array of signal, and *further having only the left array and right array each driven by a Bessel function and sound beam function respectively*. But, they fail to disclose of the specific wherein such having the left array speaker only the left channel signal and the center channel signal are driven according to the weight coefficients provided by the Bessel function, and the surround left channel signal driven to produce a left sound beam and the right array speaker, the right channel signal and the center channel signal are driven according to the weight coefficients provided by the Bessel function and the surround right channel signal driven to produce a right sound beam. But, official notice is taken such concept of the left array and right array wherein each having corresponding left channel signal and center signal and surround signal, So that each are left channel signal and center signal and surround signal are each driven according to a respective function is commonly known in the art, thus it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, with such concept of the left array and right array wherein each having corresponding left channel signal and center signal and surround signal, So that each are left channel signal and center signal and surround signal are each driven according to a respective function including Bessel and Beam function for creating sound effect.

4. An array speaker system according to claim 1, wherein the plurality of speaker units are configured as a single array speaker is arranged in front of the listening position, left channel signal, a right channel signal, and a center channel signal, all of which form the front-side channel signals, are driven according to the weight coefficients based on the Bessel function, and a surround left channel signal and a surround right channel signal, both of which form the rear-side channel signals, are driven to produce the sound beam (see claim 3 rejection and explanation).

Re claim 5, which is a broader version of claim 1, has been analyzed and rejection accordingly based on claim 1.

Re claim 6, the array system according to claim 1, wherein at least one sound reflecting surface is a wall or ceiling (Prinssen, col.7 line 43-53; col.8 line 20-35; col.12 line 10-25).

7. An array speaker system according to claim 2, But, the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, fail to disclose of wherein each of the left and right array speakers includes an m x n array of speaker units, where m represents a row and n represents a column. But, Yanaga et al. disclose of a system wherein such array includes an m x n array of speaker units, where m represents a row and n represents a column (fig.2, 25; col.8 line 40-55 33/speakers arrange in array of row and column) for the purpose of

creating consistency wide range frequency signals. thus, it would have been obvious for one of the ordinary skill in the art o have modify the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, with the array includes an m x n array of speaker units, where m represents a row and n represents a column for the purpose of creating consistency wide range frequency signals.

The combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, fail to disclose of the array speakers wherein with m being greater than n to confine the speaker units of each the left and right array speakers in a vertically elongated area. Thus, official notice is taken such concept of having the array speakers arranged wherein with m being greater than n to confine the speaker units of each the left and right array speakers in a vertically elongated area is imply the inventor's preference, thus it would have been obvious for one of the ordinary skill in the art to have modify the combined teaching of Jaffe and Yanaga et al. and Prinssen as a whole, with the array speakers arranged wherein with m being greater than n to confine the speaker units of each the left and right array speakers in a vertically elongated area for easy installation.

8. An array speaker system according to claim 7, wherein m is an integer of six or more and n is an integer of five or more (see claim 7).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Disler Paul whose telephone number is 571-270-1187. The examiner can normally be reached on 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chin Vivian can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/D. P./
Examiner, Art Unit 2615

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2615